



**ETHR Briefing to the
Presidential Advisory Committee on
High Performance Computing and Communications,
Information Technology,
and the Next Generation Internet**

December 9, 1997

**Presented by
John Cherniavsky, Chair**



ETHR FY 1998 Budget by Agency and Program Activity

Total Dollars	38.64
NSF	20.96
Applications	12.39
Education and Training	8.57
DOE	3.00
Advanced Computational Testing and Simulation Research	3.00
NASA	8.30
BRHR	8.30
NIH	6.38
NLM HPCC Training Grants	4.04
NCRR HPCC Training	1.80
NCI Frederick Biomedical Supercomputing Center	0.49
NCI High Speed Networking and Distributed Conferencing	0.05



Budget Milestones

- Provide graduate and postdoctoral support for high-performance computing research.
- Distribute mature K-12 curriculum products over the National Information Infrastructure.
- Demonstrate results of mature digital library projects. Implement an NRSA awards program, not limited to NCRR resource centers, to train biomedical scientists to use HPC technology efficiently and effectively.



Setting the ETHR R&D Agenda

- Determine agency natural interests and look for synergy
 - NSF basic research and how it can impact, for example, DoDEA schools, military training, civilian training, rehabilitation, etc.
 - DoD needs in providing cost effective training can provide application domains for research
 - New information technologies and research opportunities to
 - teach the illiterate to read
 - improve job skills
 - provide for lifelong learning (such as foreign language acquisition)
- by providing access to learning software, information, and learning environments through research testbeds, dissemination to the public, and transition to the private sector



Setting the ETHR R&D Agenda

Advanced Distributed Learning Initiative

- Develop guidelines needed for large-scale development and implementation of efficient and effective distributed learning
- Identify and promote business models and economic incentives that serve the needs of both consumers and providers of distributed learning
- Establish a rapidly growing networked community of education and training consumers
- Stimulate large-scale collaborative developments by organizations that share learning requirements
- Identify technical challenges that exceed the current state-of-the-art, and initiate collaborative research and development programs to overcome those challenges
- Share lessons learned and accelerate the development of a robust and highly-diverse object-oriented open environment for Advanced Distributed Learning



Setting the ETHR R&D Agenda

Learning Technologies ATP (NIST)

- Requirements

- Reduce the cost of producing interactive instructional software and systems
- Increase the usability of educational systems for a greater number of students and workers
- Improve manageability and quality of service levels in distributed systems

- Areas

- Content - authoring, multimedia support, component management
- User Interfaces - ITS, learner-centered, contextualization
- Environments - distributed services, simulated interaction, high-performance educational applications



Setting the ETHR R&D Agenda

NSF Learning Technology Centers

- CILT - Center for Innovative Learning Technologies - SRI, Berkeley, Vanderbilt, Concord Consortium
 - Virtual Learning Communities, Visualization and Modeling, Low Cost, Ubiquitous Computing. and Evaluation
- CIRCLE - Center for Interdisciplinary Research on Constructive Learning Environments - Pitt, CMU
 - Third Generation Intelligent Tutoring Systems, Socratic Tutoring, Dissemination
- Center for Learning Technologies in Urban Schools - Northwestern, Michigan
 - Scalability of technology enabled constructive learning in community centered design of science curriculum in urban schools



Setting the ETHR R&D Agenda

Educational Technology TRP (DARPA)

- East/West Consortium: Next Generation Authoring Tools & Instructional Applications - Apple
 - Stanford, Colorado, Pittsburgh, UMass, West Publishing, Houghton- Mifflin Company, PWS
 - Educational Object Economy
- HyperEducation - AimTech
 - Netbased authoring incorporated into IconAuthor



Setting the ETHR R&D Agenda

America's Labor Market Information System

- America's Job Bank
 - Nationwide Electronic Listing of Jobs - 750,000 and growing
- America's Talent Bank
 - Nationwide Electronic Listing of Resumes - 9 test states
- America's Training Network
 - Repository of web-based training consisting of
 - a browser-enabled user interface
 - a set of interconnected content databases
 - an undergirding application layer, structured around an expert system



Setting the ETHR R&D Agenda

NASA Learning Technology Project

- NASA Center-Based K-12 Education Outreach
- K-14 Aeronautics
- Special Projects
- Digital Library Technology
- Remote Sensing Public Access Center
- Technology of the Future
 - Web site for government agency ETHR activities
 - <http://ethr.ivv.nasa.gov/index.html>



Setting the ETHR R&D Agenda

Technology Innovation Challenge Grants

- Department of Education Initiative
 - Schools, school districts and consortia
 - Innovative and effective uses of technology in K-12 education
 - State, industry, and local partnerships
 - 20/yr 5 yr awards at approximately \$900,000/yr



Private Sector Roles

- Private sector/government partnerships
 - Technology Reinvestment Program, Advanced Technology Program in Learning Technologies
 - SBIR call in Learning Technologies
 - Systemic Reform, Agency partnerships, Center activities
- Private sector provides
 - Training in IT for agencies
 - IT materials
 - Access
 - Information



Agency Roles

- Basic Research
- Harmonization
- Information access
- Universal Access
 - Education and Training
 - ADA requirements
 - Rural and inner city access
- Agency specific education and training requirements



Multiagency Work

- Coordination of funding of basic research and Training
- Coordination on projects of multiagency interest
- Joint Funding of projects



Issue of Overlap

- Little to no overlap in agencies
 - Basic Research Agencies (NSF, DARPA, ED, NIH)
 - Mission Agencies (Labor, NASA, Energy, NIH, ED)



Major ETHR Concerns

- Structure in new NSTC
- Interagency Working Group guidance
 - Better agency coordination
 - Clearer role for Department of Education